SAFETY DATA SHEET

in accordance with 29 CFR 1910.1200, WHMIS 2022 and Safe Work Australia

Revision date: 6 December 2024 **Date of previous issue:** 16 October 2019 **SDS No.** 449A-7

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

ARC HT-S (Part A) (BLU, GY)

1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: ARC Polymer Composite to be mixed with ARC HT-S (Part B) to provide a corrosion resistant coating for hot water/steam environment.

Uses advised against: No information available

Reason why uses advised against: Not applicable

1.3. Details of the supplier of the safety data sheet

Company:
A.W. CHESTERTON COMPANY
860 Salem Street
Groveland, MA 01834-1507, USA
Tel. +1 978-469-6446
(Mon. - Fri. 8:30 - 5:00 PM EST)
SDS requests: www.chesterton.com
E-mail (SDS questions): ProductSDSs@chesterton.com
E-mail: customer.service@chesterton.com

Canada: A.W. Chesterton Company Ltd., 889 Fraser Drive,
Unit 105, Burlington, Ontario L7L 4X8 – Tel. 905-335-5055

Supplier:

1.4. Emergency telephone number

24 hours per day, 7 days per week
Call Infotrac: 1-800-535-5053
Outside N. America: +1 352-323-3500 (collect)
NSW Poisons Information Centre (Australia): 13 11 26

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

2.1.1. Classification according to 29 CFR 1910.1200 / WHMIS 2022 / Safe Work Australia / GHS

Serious eye damage Serious eye damage, Category 1, H318
Skin irritation Skin irritation, Category 2, H315
Skin sensitization Skin sensitization, Category 1, H317
Hazardous to the aquatic environment, Chronic Hazardous to the aquatic environment, Chronic, Category 3, H412

2.1.2. Additional information

For full text of H-statements: see SECTIONS 2.2 and 16.

2.2. Label elements

Labeling according to 29 CFR 1910.1200 / WHMIS 2022 / Safe Work Australia / GHS

Hazard pictograms:

Signal word: Danger

Hazard statements:

H318	Causes serious eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statements:	P261	Avoid breathing vapours.
	P264	Wash hands thoroughly after handling.
	P272	Contaminated work clothing must not be allowed out of the workplace.
	P273	Avoid release to the environment.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P305/351/338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P310	Immediately call a POISON CENTER or doctor.
	P302/352	IF ON SKIN: Wash with plenty of soap and water.
	P333/313	If skin irritation or rash occurs: Get medical advice/attention.
	P362/364	Take off contaminated clothing and wash it before reuse.
	P501	Dispose of contents/container to an approved waste disposal plant.

Supplemental information: None

2.3. Other hazards

The safety and health hazards are detailed separately by part. The safety and health hazards are detailed separately by part. The final cured material is considered nonhazardous. The final cured material is considered nonhazardous. Upon machining, refer to the precautions in the safety data sheets for Part A and Part B.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

Hazardous Ingredients[1]	% Wt.	CAS No.	GHS Classification
Epoxy resin (number average molecular weight <= 700)	15-24	28064-14-4, 9003-36-5	Skin Irrit. 2, H315 Skin Sens. 1, H317 Aquatic Chronic 2, H411
1,4-bis(2,3-epoxypropoxy)butane (Synonym Synonym: Butanedioldiglycidyl ether)	5-10	2425-79-8	Acute Tox. 4, H302, H332, H312 Eye Dam. 1, H318 Skin Irrit. 2, H315 Skin Sens. 1, H317 Aquatic Chronic 3, H412
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane (Synonym Synonym: Glycidoxypropyltrimethoxysilane)	5-9	2530-83-8	Eye Dam. 1, H318
Other ingredients:			
Calcium carbonate	10-20	1317-65-3	Not classified*
Aluminum oxide	10-20	1344-28-1	Not classified*
Silica (Quartz)	1-3	14808-60-7	Not classified*
Titanium dioxide	1-3	13463-67-7	Not classified* [a]

For full text of H-statements: see SECTION 16.
*Substance with a workplace exposure limit.
[a] Contains less than 1 % of particles with aerodynamic diameter ≤ 10 µm.

[1] Classified according to: 29 CFR 1910.1200, 1915, 1916, 1917, Mass. Right-to-Know Law (ch. 40, M.G.L..O. 111F), WHMIS 2022, Safe Work Australia, GHS

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation: Remove to fresh air. Remove to fresh air. If not breathing, administer artificial respiration. If not breathing, administer artificial respiration. Contact physician.

Skin contact: Remove contaminated clothing. Remove contaminated clothing. Wash skin with soap and water. Wash skin with soap and water. Contact physician if irritation persists.

Eye contact: Flush eyes for at least 15 minutes with large amounts of water. Flush eyes for at least 15 minutes with large amounts of water. Contact physician if irritation persists.

Ingestion: Do not induce vomiting. Do not induce vomiting. Contact physician immediately.

Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training. Avoid contact with the product while providing aid to the victim. Avoid contact with the product while providing aid to the victim. Avoid breathing mist. Avoid breathing mist. See section 8.2.2 for recommendations on personal protective equipment.

4.2. Most important symptoms and effects, both acute and delayed

Causes serious eye damage. Causes serious eye damage. May cause skin sensitization as evidenced by rashes or hives. May cause skin sensitization as evidenced by rashes or hives: High vapor concentrations resulting from heating or spraying can cause eye and respiratory tract irritation, headache, dizziness, nausea and other central nervous system effects.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptoms.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media: Carbon dioxide Carbon dioxide, dry chemical dry chemical, foam foam or or water fog

Unsuitable extinguishing media: None known

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products: Carbon Monoxide, aldehydes, Formaldehyde and other toxic fumes. Carbon Monoxide, aldehydes, Formaldehyde and other toxic fumes. See section 10.6 for additional information.

Other hazards: Hydrolyzes in water or moist air, releasing methanol and organosilicons.

5.3. Advice for firefighters

Cool exposed containers with water. Cool exposed containers with water. Recommend Firefighters wear self-contained breathing apparatus.

Australian HAZCHEM Emergency Action Code: 2 Z

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Avoid skin contact. Avoid skin contact. Utilize exposure controls and personal protection as specified in Section 8.

6.2. Environmental Precautions

Keep out of sewers, streams and waterways.

6.3. Methods and material for containment and cleaning up

Scoop up and transfer to a suitable container for disposal.

6.4. Reference to other sections

Refer to section 13 for disposal advice.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Utilize exposure controls and personal protection as specified in Section 8. Utilize exposure controls and personal protection as specified in Section 8. Wash hands thoroughly after handling. Wash hands thoroughly after handling. Remove contaminated clothing immediately. Remove contaminated clothing immediately. Wash clothing before reuse. Wash clothing before reuse. Contaminated work clothing must not be allowed out of the workplace. Contaminated work clothing must not be allowed out of the workplace. Contaminated leather including shoes cannot be decontaminated and should be discarded. Contaminated leather including shoes cannot be decontaminated and should be discarded. Avoid creating and breathing dust during removal, drilling, grinding, sawing or sanding.

7.2. Conditions for safe storage, including any incompatibilities

Store in a cool, dry area.

7.3. Specific end use(s)

No special precautions.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Occupational exposure limit values

Ingredients	OSHA PEL[1]		ACGIH TLV[2]		AUSTRALIA ES[3]	
	ppm	mg/m³	ppm	mg/m³	ppm	mg/m³
Epoxy resin (number average molecular weight <= 700)	N/A	N/A	N/A	N/A	N/A	N/A
1,4-bis(2,3-epoxypropoxy)butane	N/A	N/A	N/A	N/A	N/A	N/A
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane*	N/A	N/A	N/A	N/A	N/A	N/A
Calcium carbonate	(total) (resp.)	15 5	**	10 (inhal.) 3 (resp.)	N/A	10
Aluminum oxide	N/A	15	(resp.)	1	(insp.)	10
Silica (Quartz)	(total) (resp.)	0.3 0.05	(resp.)	0.025	(resp.)	0.05
Titanium dioxide	N/A	15	N/A	10	N/A	10

*Recommended exposure limit: 0.5 ppm (8-hr TWA)
**Particles Not Otherwise Specified (PNOS)
[1] United States Occupational Health & Safety Administration permissible exposure limits
[2] American Conference of Governmental Industrial Hygienists threshold limit values
[3] Safe Work Australia, Workplace Exposure Standards for Airborne Contaminants

Biological limit values

No biological exposure limits noted for the ingredient(s).

8.2. Exposure controls

8.2.1. Engineering measures

Provide sufficient ventilation to keep the vapor concentrations below the exposure limits. Provide sufficient ventilation to keep the vapor concentrations below the exposure limits. If necessary, provide local exhaust. If necessary, provide local exhaust. If it is necessary to alter the final cured product such that dust may be generated, use adequate dust extraction or damp down.

8.2.2. Individual protection measures

Respiratory protection: Not normally needed. Not normally needed. In case of insufficient ventilation, utilize an approved organic vapor respirator (e.g., EN filter type A/P). During spraying, wear suitable respiratory equipment.

Protective gloves: Chemical resistant gloves (e.g., butyl rubber, nitrile)

Eye and face protection: Safety goggles.

Other: Impervious clothing as necessary to prevent skin contact.

8.2.3. Environmental exposure controls

Refer to sections 6 and 12.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state	viscous liquid	**pH**	not applicable
Colour	gray	**Kinematic viscosity**	3,900 cSt @ 25°C
Odour	mild	**Solubility in water**	insoluble
Odour threshold	not determined	**Partition coefficient n-octanol/water (log value)**	not applicable
Boiling point or range	not determined	**Vapour pressure @ 20°C**	not determined
Melting point/freezing point	not determined	**Density and/or relative density**	1.8 kg/l
% Volatile (by volume)	< 1%	**Weight per volume**	14.96 lbs/gal.
Flammability	not applicable	**Vapour density (air=1)**	> 1
Lower/upper flammability or explosion limits	not applicable	**Rate of evaporation (ether=1)**	< 1
Flash point	113°C (236°F)	**% Aromatics by weight**	0%
Method	PM Closed Cup	**Particle characteristics**	not applicable
Autoignition temperature	not applicable	**Explosive properties**	not applicable
Decomposition temperature	not determined	**Oxidising properties**	not applicable

9.2. Other information

None

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

[3-(2,3-epoxypropoxy)propyl]trimethoxysilane [3-(2.3-epoxypropoxy)propyl]trimethoxysilane: hydrolyzes in water or moist air, releasing methanol and organosilicons.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

No dangerous reactions known under conditions of normal use.

10.4. Conditions to avoid

Open flames and high temperatures.

10.5. Incompatible materials

Strong acids/bases and strong oxidizers like liquid Chlorine and concentrated Oxygen.

10.6. Hazardous decomposition products

Carbon Monoxide, aldehydes and other toxic fumes. Carbon Monoxide, aldehydes and other toxic fumes. May generate Formaldehyde at temperatures greater than 150°C (300°F). May generate Formaldehyde at temperatures greater than 150°C (300°F). Hydrolyzes in water or moist air, releasing methanol and organosilicons.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Primary route of exposure under normal use: Inhalation, skin and eye contact. Inhalation, skin and eye contact. Personnel with pre-existing skin or lung allergies may be aggravated by exposure.

Acute toxicity -

Oral: ATE-mix = 13,141 mg/kg. Based on available data on components, the classification criteria are not met.

Substance	Test	Result
Epoxy resin	LD50 LD50, rat	> 5,000 mg/kg
Aluminum oxide	LD50 LD50, rat	> 5,000 mg/kg
1,4-bis(2,3-epoxypropoxy)butane	LD50 LD50, rat	1,163 mg/kg
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	LD50 LD50, rat	8,025 mg/kg
Titanium dioxide	LD50 LD50, rat	> 10,000 mg/kg

Dermal: ATE-mix = 12,768 mg/kg. Based on available data on components, the classification criteria are not met.

Substance	Test	Result
Epoxy resin	LC50 LC50, rabbit	> 3,000 mg/kg
1,4-bis(2,3-epoxypropoxy)butane	LD50 LD50, rabbit	1,130 mg/kg
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	LD50 LD50, rabbit	4,248 mg/kg
Titanium dioxide	LC50 LC50, rabbit	> 10,000 mg/kg

Inhalation: High vapor concentrations resulting from heating or spraying can cause eye and respiratory tract irritation, headache, dizziness, nausea and other central nervous system effects. High vapor concentrations resulting from heating or spraying can cause eye and respiratory tract irritation, headache, dizziness, nausea and other central nervous system effects. ATE-mix = 124.3 mg/l (vapour), 16.95 mg/l (mist). Based on available data on components, the classification criteria are not met.

Substance	Test	Result
Epoxy resin	LC50 inhalation LC50 inhalation, rat	> 1.7 mg/l/4 h
1,4-bis(2,3-epoxypropoxy)butane	LC50 inhalation LC50 inhalation, rat, 6 h	> 250 ppm
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	LC50 inhalation LC50 inhalation, rat, 4 h h, Aerosol	5.3 mg/l

Skin corrosion/irritation: Causes skin irritation.

Substance	Test	Result
Epoxy resin	Skin irritation Skin irritation, rabbit	Moderate irritation
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	Skin irritation Skin irritation, rabbit	Mild irritation

Serious eye damage/ irritation: Causes serious eye damage.

Substance	Test	Result
Epoxy resin	Eye irritation Eye irritation, rabbit	Slightly irritating
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	Eye irritation Eye irritation, rabbit	Corrosive

Respiratory or skin sensitisation: May cause an allergic skin reaction.

Substance	Test	Result
Epoxy resin	Skin sensitization Skin sensitization, guinea pig	Sensitizing
1,4-bis(2,3-epoxypropoxy)butane	Skin sensitization Skin sensitization, guinea pig	Sensitizing
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	Skin sensitization Skin sensitization, human human, guinea pig	Not sensitizing

Germ cell mutagenicity: Epoxy resin Epoxy resin, [3-(2,3-epoxypropoxy)propyl]trimethoxysilane [3-(2.3-epoxypropoxy)propyl]trimethoxysilane: based on available data, the classification criteria are not met.

Carcinogenicity: The International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) have classified inhaled silica as a human carcinogen. The International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) have classified inhaled silica as a human carcinogen. IARC has designated inhaled titanium dioxide as possibly carcinogenic to humans (group 2B). IARC has designated inhaled titanium dioxide as possibly carcinogenic to humans (group 2B). Epoxy resin Epoxy resin, [3-(2,3-epoxypropoxy)propyl]trimethoxysilane [3-(2.3-epoxypropoxy)propyl]trimethoxysilane: based on available data, the classification criteria are not met.

Reproductive toxicity: Epoxy resin Epoxy resin, [3-(2,3-epoxypropoxy)propyl]trimethoxysilane [3-(2.3-epoxypropoxy)propyl]trimethoxysilane: based on available data, the classification criteria are not met.

STOT – single exposure: Epoxy resin Epoxy resin, [3-(2,3-epoxypropoxy)propyl]trimethoxysilane [3-(2.3-epoxypropoxy)propyl]trimethoxysilane: based on available data, the classification criteria are not met.

STOT – repeated exposure: Epoxy resin Epoxy resin, [3-(2,3-epoxypropoxy)propyl]trimethoxysilane [3-(2.3-epoxypropoxy)propyl]trimethoxysilane: based on available data, the classification criteria are not met. based on available data, the classification criteria are not met. 1,4-bis(2,3-epoxypropoxy)butane 1.4-bis(2.3-epoxypropoxy)butane: 28-day oral subchronic study (4 weeks weeks) rat rat male / female female, NOAEL = 200 mg/kg. Repeated inhalation of respirable free silica may cause scarring of the lungs with cough and shortness of breath. Silicosis, a delayed lung injury that is a disabling, progressive and sometimes fatal pulmonary fibrosis, may result.

Substance	Test	Result
Epoxy resin (number average molecular weight <= 700)	Sub-chronic NOAEL Sub-chronic NOAEL, oral oral, 90 days 90 days, rat rat, male / female (OECD 408)	250 mg/kg

Aspiration hazard: Based on available data, the classification criteria are not met.

Other information: The silica and titanium dioxide in this product do not separate from the mixture or in of themselves become airborne, therefore, do not present a hazard in normal use.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicological data have not been determined specifically for this product. The information given below is based on a knowledge of the components and the ecotoxicology of similar substances.

12.1. Toxicity

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Butanedioldiglycidyl ether Butanedioldiglycidyl ether: 96 h LC50 (fish) = 19.8 mg/l (danio rerio). Epoxy resin (number average molecular weight <= 700) is toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment (LC50/EC50 between 1 and 10 mg/l in the most sensitive species.); chronic NOEC chronic NOEC, 21 days 21 days, Daphnia magna (OECD 211) = 0.3 mg/l.

12.2. Persistence and degradability

Unreacted components (Parts A and B), improperly released to the environment, can cause ground and water pollution. Unreacted components (Parts A and B), improperly released to the environment, can cause ground and water pollution. Epoxy resin Epoxy resin, 1,4-bis(2,3-epoxypropoxy)butane 1.4-bis(2.3-epoxypropoxy)butane: not readily biodegradable. not readily biodegradable. [3-(2,3-epoxypropoxy)propyl]trimethoxysilane [3-(2.3-epoxypropoxy)propyl]trimethoxysilane: hydrolyzes in water or moist air, releasing methanol and organosilicons.

12.3. Bioaccumulative potential

Epoxy resin Epoxy resin: log Kow = 3.6; BCF = 150 (fish); has the potential to bioaccumulate. has the potential to bioaccumulate. 1,4-bis(2,3-epoxypropoxy)butane 1.4-bis(2.3-epoxypropoxy)butane: has the potential to bioaccumulate. has the potential to bioaccumulate. [3-(2,3-epoxypropoxy)propyl]trimethoxysilane [3-(2.3-epoxypropoxy)propyl]trimethoxysilane: low potential for bioaccumulation.

12.4. Mobility in soil

Viscous liquid. Insoluble in water. Insoluble in water. In determining environmental mobility, consider the product's physical and chemical properties (see Section 9). In determining environmental mobility, consider the product's physical and chemical properties (see Section 9). Epoxy resin Epoxy resin: if product enters soil, it will be mobile and may contaminate groundwater.

12.5. Endocrine disrupting properties

None known

12.6. Other adverse effects

None known

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Combine resin and curative. Combine resin and curative. The final cured material is considered nonhazardous. The final cured material is considered nonhazardous. Unreacted components are a special waste. Unreacted components are a special waste. Incinerate waste product when in liquid form with a properly licensed facility. Incinerate waste product when in liquid form with a properly licensed facility. Check local, state and national/federal regulations and comply with the most stringent requirement.

SECTION 14: TRANSPORT INFORMATION

14.1. UN number or ID number

ADG/ADR/RID/ADN/IMDG/ICAO: UN3082
TDG: UN3082
US DOT: UN3082

14.2. UN proper shipping name

ADG/ADR/RID/ADN/IMDG/ICAO: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (EPOXY RESIN)
TDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (EPOXY RESIN)
US DOT: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (EPOXY RESIN)

14.3. Transport hazard class(es)

ADG/ADR/RID/ADN/IMDG/ICAO: 9
TDG: 9
US DOT: 9

14.4. Packing group

ADG/ADR/RID/ADN/IMDG/ICAO: III
TDG: III
US DOT: III

14.5. Environmental hazards

MARINE POLLUTANT

14.6. Special precautions for user

NO SPECIAL PRECAUTIONS FOR USER

14.7. Maritime transport in bulk according to IMO instruments

NOT APPLICABLE

14.8. Other information

US DOT: ERG NO.171,
MAY BE SHIPPED AS NON-RESTRICTED IN NON-BULK PACKAGINGS (119 GALLONS OR LESS) BY MOTOR VEHICLE, RAIL CAR OR AIRCRAFT.
(49 CFR 171.4(C))
IMDG: EMS. F-A, S-F
MAY BE SHIPPED AS NON-RESTRICTED IN SINGLE OR COMBINATION PACKAGINGS CONTAINING A NET QUANTITY PER SINGLE OR INNER PACKAGING OF 5 L OR LESS. (IMDG CODE AMENDMENT 37-14, 2.10.2.7)
ICAO/IATA: MAY BE SHIPPED AS NON-RESTRICTED IN SINGLE OR COMBINATION PACKAGINGS CONTAINING A NET QUANTITY PER SINGLE OR INNER PACKAGING OF 5 L OR LESS.(IATA DANGEROUS GOODS REGULATION 56TH EDITION, 4.4 SPECIAL PROVISIONS A197)
ADR: CLASSIFICATION CODE M6, TRANSPORT CATEGORY 3, TUNNEL RESTRICTION CODE (-)
MAY BE SHIPPED AS NON-RESTRICTED IN SINGLE OR COMBINATION PACKAGINGS CONTAINING A NET QUANTITY PER SINGLE OR INNER PACKAGING OF 5 L OR LESS. (ADR 2015 VOLUME 1, CHAPTER 3.3 SPECIAL PROVISIONS 375)
ADG HAZCHEM CODE: ●3Z **HIN:** 90

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. National regulations

US EPA SARA TITLE III

312 Hazards:

Serious eye damage
Skin irritation
Skin sensitization

Chemicals subject to reporting requirements of Section 313 of EPCRA and of 40 CFR 372:

None

TSCA: All chemical components are listed or exempted.

Other national regulations: None

SECTION 16: OTHER INFORMATION

Abbreviations and acronyms:
ADG: Australian Dangerous Goods Code
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE: Acute Toxicity Estimate
BCF: Bioconcentration Factor
cATpE: Converted Acute Toxicity point Estimate
ES: Exposure Standard
GHS: Globally Harmonized System
ICAO: International Civil Aviation Organization
IMDG: International Maritime Dangerous Goods
LC50: Lethal Concentration to 50 % of a test population
LD50: Lethal Dose to 50% of a test population
LOEL: Lowest Observed Effect Level
N/A: Not Applicable
NA: Not Available
NOEC: No Observed Effect Concentration
NOEL: No Observed Effect Level
OECD: Organization for Economic Co-operation and Development
(Q)SAR: Quantitative Structure-Activity Relationship
REL: Recommended Exposure Limit
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS: Safety Data Sheet
STEL: Short Term Exposure Limit
STOT RE: Specific Target Organ Toxicity, Repeated Exposure
STOT SE: Specific Target Organ Toxicity, Single Exposure
TDG: Transportation of Dangerous Goods (Canada)
TWA: Time Weighted Average
US DOT: United States Department of Transportation
WHMIS: Workplace Hazardous Materials Information System
Other abbreviations and acronyms can be looked up at www.wikipedia.org.

Key literature references and sources for data:
Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST)
Chemical Classification and Information Database (CCID)
European Chemicals Agency (ECHA) - Information on Chemicals
Hazardous Chemical Information System (HCIS)
National Institute of Technology and Evaluation (NITE)
U.S. National Library of Medicine Toxicology Data Network (TOXNET)

Procedure used to derive the classification for mixtures according to GHS:

Classification	Classification procedure
Eye Dam. 1, H318	Calculation method
Skin Irrit. 2, H315	Calculation method
Skin Sens. 1, H317	Calculation method
Aquatic Chronic 3, H412	Calculation method

Relevant H-statements:
H302: Harmful if swallowed.
H312: Harmful in contact with skin.
H315: Causes skin irritation.
H317: May cause an allergic skin reaction.
H318: Causes serious eye damage.
H319: Causes serious eye irritation.
H332: Harmful if inhaled.
H411: Toxic to aquatic life with long lasting effects.
H412: Harmful to aquatic life with long lasting effects.

Hazard pictogram names: Corrosion Corrosion, exclamation mark

Further information: None

Date of last revision: 6 December 2024

Changes to the SDS in this revision: Sections 1.2, 1.3, 2.1, 2.2, 3, 5.2, 8.1, 9.1, 12.1, 12.3, 12.5, 13, 14, 15, 16.

This information is based solely on data provided by suppliers of the materials used, not on the mixture itself. No warranty is expressed or implied regarding the suitability of the product for the user's particular purpose. The user must make their own determination as to suitability.